

Received September 24, 1766.

IV. *An Attempt to account for the universal Deluge, by Edward King, Esq; of Lincoln's-Inn, F. R. S.*

Read Jan. 22.
1767.

AFTER so many conjectures as have been already formed concerning the cause of the universal deluge, it may perhaps appear both impertinent to attempt a new solution, and also useless, as theories formed on mere hypothesis are always uncertain, and little to be depended upon. But if we give them no more weight than they deserve, and, considering them only as small steps towards the investigation of truth, do not desire any further assent to our conclusions than the probability on which they are founded demands, even such kind of enquiries may be of service, and open a door to new discoveries.

Where we cannot arrive at demonstration we must be content with probability. Our despair of attaining the one ought not to make us neglect the other. And with regard to this remarkable event, the universal deluge, every degree of probability, even the smallest, that appears in an attempt to account for it philosophically, has its use; as it tends to remove those objections that are made to the truth of the fact, by persons who may not think the mere relation of it in the Mosaic writings a sufficient proof of the reality of it; or who may be led, from the difficulty there
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appears in accounting for such an event, to doubt of the authority of those sacred books.

Many ingenious hypotheses have been already formed on this subject; but they all seem liable to most insuperable objections: and therefore I make no scruple to venture another into the world, which appears to me free from such difficulties as they are involved in, and more simple. I am willing, however, it should fall to the ground, as soon as there appear any reasonable and weighty objections to it. I only wish that the hints contained in this paper may be a means of leading some person of greater abilities to a more perfect discovery; and that it may always be remembered, that the fossil shells found in all parts of the earth, are a sufficient proof of the truth of its having been at some time or other entirely covered with water, however fallible any attempt to account for the deluge may be.

Dr. Burnet, in his theory, has given such an account of the deluge, as Dr. Keill has shown to be very improbable, and unphilosophical. He has first described the primæval earth so as to divest it of all beauty and elegance, and then has ascribed the deluge to such causes, as are not only somewhat inconsistent with that part of his theory, where he supposes the earth to be well watered and moistened with dew; but are also insufficient to account for the waters flowing over the tops of the mountains: since on the breaking of his imaginary shell, it is impossible to suppose that the waters of the abyss, even on such a concussion, should flow up high enough upon those parts that were left elevated, so as to cover the mountains that now subsist.

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Mr. Whiston has called in the assistance of another planetary body ; and has supposed the tail of a comet to be so greatly condensed as to afford a quantity of water sufficient for this purpose. But, besides the inconsistency of this theory with that of gravitation, it is no less difficult, according to his hypothesis, to get rid of the water with which the earth was covered, than it is, according to others, to find a sufficient quantity.

Mr. Ray has accounted for this amazing event, by supposing a change to have happened in the center of gravity of the earth. But how to find a cause for such a change in the center of gravity, and for a restoration of it to the same place again, is more difficult, and the supposition of it more inconsistent with our philosophical ideas, than any other hypothesis whatever.

Such have been some of the principal theories hitherto advanced, and far be it from me to presume that mine may not in the end be found equally fallible ; but it appears to me at present to be more plain and consistent, and at the same time is free from that great difficulty which has perplexed all the rest, and is indeed the most important difficulty in the enquiry, that is, the accounting for a sufficient quantity of water.

We find in the Mosaic history of the creation, that God at the first created sea as well as land ; and therefore have grounds to believe both from thence, and from the reason of things, that there was as great a quantity of sea on the antediluvian earth, as there is now upon the earth in its present state.

We find also the whole surface of the earth to be undermined by subterraneous fires, which make their
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appearance in various places, in very formidable volcanoes. This has been the case in Italy, and amongst the Azores, in Tartary, in Kamtschatka, in South America, in Ireland, in the islands of the East Indies, and in other parts: and we have reason to believe that these subterraneous fires have made eruptions, not unfrequently, even in the bottom of the sea; as Mr. Mitchell has made appear in his excellent paper concerning the causes of earthquakes*.

We have also, in the Philosophical Transactions, an account of entire islands being raised in the Archipelago, and likewise amongst the Azores, by such subterraneous fires †; and Mr. Ray, in his travels, mentions a mountain one hundred feet high, raised by the earthquake in 1538, which also threw up so much earth, stones, and ashes, as quite filled up the Lacus Lucrinus ‡.

To which may be added, that fossil shells and other marine bodies are so universally found in all parts of the present continents and islands, as to amount almost to a demonstration, that all the now dry land was once covered with sea, and that for a considerable space of time, probably much longer than the continuance of the deluge is related to have been. For though such a violent flux of waters might have thrown up some shells and marine bodies upon the hills and mountains, yet it could not have flung up such vast quantities, nor so universally. The prodigious beds of shells which we now find in all parts

* Philos. Transf. Vol. LI. part II. p. 566.

† Philos. Transf. No 372, or Eames's Abr. vol. VI. part II. p. 203, and Jones's Abr. vol. V. part II. p. 196,

‡ Ray's Travels, old edition, p. 273.

cannot well be accounted for, but by supposing the waters, in which those shell-fish lived, to have covered the countries where they are now found, for a long time, and even for ages.

The supposition therefore, which I am about to advance, founded on these facts, is this; that originally Almighty God created this earth with sea and land nearly in the same proportion as they now remain, and that it continued in that state for many ages, during which the bottom of the sea became covered with shells, and various heterogeneous bodies that from the first of its creation there were also many subterraneous fires found within the bowels of the earth; and that, at the appointed time, these fires bursting forth at once with great violence, under the sea *, raised up the bottom of the ocean, so as to pour out the waters over the face of what was before dry land, which by that means became sea, and has perhaps continued so ever since, as that which was before the flood the bottom of the sea, probably from that time has continued to be continent and dry land †.

* Mr. Mitchell has shewn, in his paper on the causes of earthquakes, that such subterraneous fires are at all times very liable to make eruptions under the sea, and that when they do so, the earthquakes consequent upon such eruptions are more extensive than any whatever.

† I do not mean by this to insinuate that all that part of the globe which is now sea was dry land before the flood: or that the antediluvian ocean was merely of the extent of our present continent. I apprehend, on the contrary, that there was always a greater proportion of water on the face of the earth than of continent; and I would only be understood to mean, that all that which was dry land before the flood is now buried under the sea, whilst that which was a part of the bottom of the antediluvian

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This hypothesis may perhaps be liable to great objections; but it is at least consistent with what Moses relates of the fountains of the great deep being broken up; and, without any perplexity or difficulty, accounts at once for a sufficient quantity of water to cover the tops of the highest antediluvian mountains, even supposing they were left standing: though it is not improbable but that they might be thrown down by means of the same earthquake. If they were left standing, some of them might (on the retreat of the waters from their tops after the first concussion) form some of the islands that now subsist.

I must also add, that this hypothesis is perfectly consistent with, and perhaps in some measure accounts for, that singular position of the strata of coals, ores, and various kinds of earths (mentioned in Mr. Mitchell's paper), which are found always sloping from mountainous countries, and higher grounds, towards the bottom of the sea; so that what is nearest the surface of the earth in mountains and high countries lies deepest in low lands and under the sea.

It is, besides, somewhat confirmed by that singular observation of Dr. Hasselquist's, in his travels, (p. 33) where, speaking of Natolia and the eastern countries in general, he says, "In no place was it more evident that the continent, we call earth, was in the beginning the bottom of the sea." Ulloa also informs us, that the same thing is evident in the whole country of Valles in South America*: and Norden

ocean forms our present land: and that consequently some part of the ocean was sea both in the antediluvian earth and in the present state of it, and common to both.

* Ulloa's voyage to South America, vol. II. p. 99.

tells us, that the rocks in Egypt bear evident marks of having been washed by the sea *.

These are the reasons which induce me to venture upon this supposition ; and now I will just consider one or two objections, that appear to me amongst the most material which may be made to what I have advanced.

It may perhaps be said, that we read † “ of the “ waters returning from off the earth, and of their “ being abated at the end of the hundred and fifty “ days : and also, of the waters decreasing continually “ till the tenth month ; and of the tops of the “ mountains being then seen.” And it may be objected, that we ought from thence to conclude, that the waters of the deluge, having covered what was before dry ground, afterwards retreated, and left the very same hills and land dry again.

But this conclusion is by no means necessary ; for all that can be inferred from what we find in Genesis concerning the decrease of the waters, is, that they gradually subsided from off the face of what is now continent and dry land, as of course they would do on the elevation of it, agreeable to the foregoing hypothesis. And indeed, if the deluge was effected in the way here supposed, we can then give a rational and easy account how all the water came to drain off the ground, and to leave it dry so soon as is recorded ; which otherwise is a circumstance in this piece of history very perplexing. It is evident, that such a violent earthquake, or bursting forth of the subterraneous fire, as is here supposed to have raised the

* Norden's Travels, vol. II. p. 21.

† Genesis, ch. viii. 3—5.

bottom of the then sea (the present continents), at once as high or higher than what was before dry land, must in a very short time have drowned and overwhelmed the antediluvian earth, by pouring out the waters upon it; and it is also evident, that for some time the bottom of the sea, so raised, would continue covered with the waters, which, till the vast agitation into which they were flung subsided, would continue flowing backwards and forwards. But, by degrees, and very easily within the time mentioned in Scripture, the water would drain off from all the higher parts, and leave the new land quite dry, and in the state we now find it, with strata of shells, and sand, and stones, and other bodies, lying just as the sea had by accident many ages before placed them. Whereas, were the deluge occasioned only by an addition of water sufficient to raise the surface of the sea higher than the land and mountains, in that case, it is impossible to imagine any means, at all consistent with the course and laws of nature, by which such an immense body of water could be evaporated or conveyed away in so short a space of time. And besides, in that case, the shells, &c. flung upon the land by the concussion of the waters, and subsiding there within so short a space of time, would rather be found lying according to their specific gravities: a fact which Dr. Woodward supposed certain, but which is by no means true. Nor indeed, according to the conjectures here advanced, is it at all necessary that it should be so. For, as I imagine the shells and other marine bodies, which are now found on various parts of the dry land, to have been placed there gradually during a succession of ages, whilst it was the bottom of the sea; it will

follow, that they must be found just as the sea, by its washings and motion, laid them; which would of course first wash many of them together, and then wash gravel, or sand, or clay, or other substances over them; after which, more shells or other bodies would be deposited, and then more stones or gravel, &c. according to the nature of the soil. In short, whatever was specifically heavier than water, would (after its removal by any agitation) soon subside, and remain fixed, whether the substances underneath it were specifically heavier than itself or no: it is sufficient that they were but all specifically heavier than the water.

We find to this day great changes are continually making, within the memory of man, both on the face of the earth, in the shores, and in the bottom of the sea, even in those small parts of it that we are acquainted with; and such changes must also have happened before the flood, and might very probably produce that situation of shells, &c. so different from what might be expected from their specific weights.

Another objection may perhaps be made by saying, if all the antediluvian earth was at once overwhelmed, and of course all its plants with it, whence came it to pass, that the now dry land was so soon covered with vegetables and herbage of all kinds? To this I answer, in the first place, that the difficulty is just the same, whether we suppose the bottom of the antediluvian sea to be the present continents, or whether we suppose the face of the earth to have remained the very same; since, by the waters of the deluge, all plants, trees, and vegetables, must in both cases equally have been destroyed; and nothing could well remain,
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except some of their shoots and seeds; which might just as well take root on the new continent, on the subsiding of the waters, as on the old. And in the next place, I answer, that there are not a few instances (as is shown in Stillingfleet's tracts*) of barren rocks and plains becoming by degrees well covered with verdure, though very remote from any places that might apparently furnish seeds. They have first borne a kind of moss, and afterwards other plants of an higher order (the seeds being brought there by accident, and by the various and admirable means of conveyance, which the Creator has given them), till at last they have been covered with rich verdure. To which may be added a very extraordinary fact, now well known, namely, that if a piece of ground which has not been cultivated be turned up, and the clods loosened, it will very soon produce a variety of plants, some of which were never known to grow there before. We find that one acorn is sufficient to produce a forest, and it is by no means to be supposed (let the deluge have happened how it would) that, immediately after it, the earth was as well clothed with verdure, as it has become since. Probably it was for a time in general very barren, except such parts as Noah and his sons cultivated, with seeds which they had preserved in the ark.

As to the leaf which the dove brought in †, that might be found on some plant which had taken fresh root immediately on the subsiding of the waters, or it

* Stillingfleet's Tracts, p. 78, and also p. 45, where an instance is produced, much to the purpose, of marshes becoming by degrees fine meadows.

† Genesis, ch. viii. v. 11.

is not impossible but the top of some antediluvian mountain, having been but slightly covered, might on the ceasing of the first concussion (as I before observed) remain in the state of an island, elevated above the surface of the sea.

I apprehend, no objection of any weight can arise from the description of paradise in Scripture, nor from its being said that the ark rested on the mountains of Ararat: since, whether the continent was changed or no, there is no place now remaining that answers the description of the former; nor is there any thing said about the latter, that should lead us to conclude there ever was such a mountain as Ararat before the flood.

But, leaving these objections from the words of Scripture, and the history of the deluge; another may perhaps arise, from this circumstance, that shells are found in various parts of the earth, which are evidently not the shells peculiar to the seas adjoining, but such as belong to a different climate. This fact at first certainly seems to contradict what I have advanced: and yet, when well considered, it will perhaps rather be found to confirm my hypothesis. For let any one but look on a terrestrial globe, and he will instantly see, that the present continents are evidently not in the same climates as the present seas; and therefore, though the shells found in many places of the earth are not found in the neighbouring parts of the ocean; yet, when those parts of the earth were ocean, they might have had a very proper climate and situation there. Thus, for instance, we may observe that the Mediterranean is in a more southern climate than the neighbouring continent of Europe, and in a more northern climate than that of Africa. And the whole

whole continent of Asia is in a climate much more northern, than the neighbouring Indian ocean.

But, if this solution of the difficulty is not thought sufficient, it may be added, that so great a concussion, and such a change in the figure of the earth, as must have happened from the subterraneous fires elevating so many parts higher than they were before, might possibly affect the gravitation of the parts of the globe of the earth, and cause it to revolve round a different axis after the flood; whence there would undoubtedly arise a change of climate in all parts, sufficient to account for the present situation of shells, in places so foreign to the climates where shell fish of the same species are now found. And as I have before observed with regard to seeds, so it may also be observed with regard to shell fish, that the conveyance of a very few of each sort (by the flux of water) to the beds proper for them, would be sufficient to preserve all the various kinds, and to cause them now to be found in such numbers, in those parts of the ocean that are best adapted to each peculiar class.

Another thing proper to be taken notice of, is the horns and bones of terrestrial animals being found in the earth, together with fossil shells; which seems to contradict the supposition of the present continents having been originally the bottom of the sea. But with regard to this, I must beg leave to observe, that probably some of those bones have been deposited there since the flood, and have been covered by an addition of earth, as has happened also to some of the trees and woods that were cut down in this island by the Romans. And, as to the rest, it cannot
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be supposed, but that on the first great eruption, which poured the waters of the ocean upon the dry land, there must have been a violent agitation for some time, by their flowing backward and forward ; during which interval, the bodies of many terrestrial animals (floating on the water) would be washed to different parts of the new-raised continent, and be left there as the water subsided.

Some little objection perhaps may arise, from its being observed, that the sea at present covers a much greater part of the globe than the dry land does.

But I apprehend this was also the case before the flood ; and it may easily be conceived, that some part of the bottom of the antediluvian ocean might be flung in the manner supposed in this paper, and not the whole ; and that the bottom of the present ocean consists not only of what was before the flood dry land, but also of some part of what was, even from the beginning, the bottom of the sea.

I will therefore only just add, that probably the same subterraneous fires (which originally raised the continents and islands that now appear, and have ever since been making great changes in the bowels of the earth, and producing those tremendous earthquakes, which have happened from time to time) may in the end break forth with redoubled violence, and destroy it, in the manner foretold in Scripture.

It may not be amiss to add, in confirmation of the foregoing hypothesis, that the beds of shells, discovered in chalk pits, gravel pits, and other places, consist generally of one or two, or at most of a very few

few different sorts in each particular place, as they would of course do upon a supposition that those respective beds were formerly at the bottom of the sea, in the several places where those different kind of shell fish lived and bred ; and that they were from thence, together with the bottom of the antediluvian ocean, raised up by the force of subterranean fires : for we may observe in the present seas, that one species of shell fish take up their habitation in one place, whilst those of a different species are found in some other ; and that numbers of the same kind, as for instance cockles, or oysters, are generally found on the same banks. The present appearance of fossil shells, therefore, does at least in this respect seem consistent with the conjectures here advanced : whereas, upon a supposition that these fossil shells were carried to their respective places, at the time of the flood, merely by the torrent of water that then flowed to and fro, they ought rather to be found mixed promiscuously together ; and not those of one species in one place ; and those of a different species in another. And I beg leave here to mention, that, since the writing of the foregoing paper, I find an hypothesis somewhat similar to what is here advanced was adopted by Lazzaro Moro, a Venetian author, who asserts that the continents were originally raised by subterranean fires ; but he considers this merely as the cause of their first and original formation, and not as having occasioned the deluge, nor as having happened at that time.